

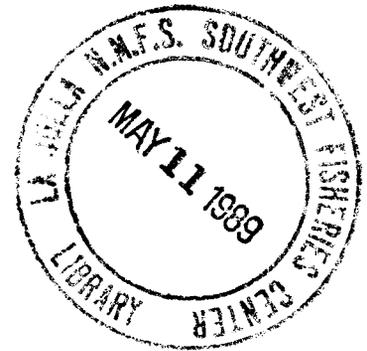
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APRIL 1989

**ECONOMIC STATUS OF THE  
WASHINGTON, OREGON, AND CALIFORNIA  
GROUNDFISH FISHERY IN 1987**

Charles S. Korson  
Richard K. Kinoshita



NOAA-TM-NMFS-SWR-020

U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southwest Fisheries Center

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# **ECONOMIC STATUS OF THE WASHINGTON, OREGON, AND CALIFORNIA GROUNDFISH FISHERY IN 1987**

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## EXECUTIVE SUMMARY

This report reviews the economic status of the 1987 Washington, Oregon, and California (West Coast) groundfish fishery. The West Coast groundfish fishery is managed under the Pacific Fishery Management Council's Groundfish Fishery Management Plan and consists of over 100 varieties of benthic and pelagic fish species. An array of different groups harvest these groundfish species: domestic commercial vessels that fish with a wide variety of gears, foreign catcher-processor vessels, foreign processing vessels engaged in joint ventures with U.S. vessels, and shore and boat recreational fishermen. An extensive industry that processes and markets groundfish products for consumption at home and abroad is also an important component of the fishery.

Data on landings, exvessel values, and fleet size were supplied or compiled from state agency reports, PacFin tabular statistics, or data files obtained from the PacFin research database. Statistics were generated, tabulated, and summarized to review changes in the economic condition of the fishery between 1986 and 1987. Indicators of fleet economic performance are provided. Conditions in the market and processing sectors are reviewed by examining data on the value of domestic processed groundfish products and magnitude of groundfish imports and exports.

The West Coast groundfish fishery improved considerably in 1987 compared to 1986. Domestic commercial landings (shoreside and joint venture) were a record 198,400 metric tons (mt), up over 21 percent from 1986 landings. The exvessel value of these landings was 28 percent higher, reaching \$83.5 million. The quantity and value of landings increased in the shoreside and joint venture sectors, and were higher in Oregon and Washington. California had stable landings combined with higher exvessel values.

Record landings and values in the groundfish fishery and improved results in alternate fisheries that are important to trawl vessels led to increased gross earnings for this major segment of the harvesting sector. Other commercial fleets had generally stable (sablefish pots) or higher gross earnings (sablefish longline) in 1987.

# Economic Status of the Washington, Oregon and California Groundfish Fishery in 1987

## I. Introduction

This is the fourth annual report on the economic status of the Washington, Oregon, and California (West Coast) groundfish fishery.<sup>1</sup> It focuses on factors affecting the economic performance of business firms which harvest, process, and market groundfish stocks regulated under the Pacific Coast Groundfish Fishery Management Plan.<sup>2</sup> These firms include domestic commercial vessels that fish with a wide variety of gears, foreign catcher-processor vessels, shoreside fish processing plants, and foreign processing vessels involved in joint ventures with U.S. fishing vessels. Most of these firms in the industry harvest and process not only groundfish, but an array of non-groundfish species such as pink shrimp, dungeness crab, salmon, and tuna.

This report reviews the progress of the fishery in 1987 and compares it to the results for the 1986 calendar year. Section II provides a general overview of the past fishing year, along with a discussion of management actions impacting the fishery. Section III describes the economic condition of the commercial groundfish harvesting sector. The performance of the West Coast groundfish processing sector is reviewed in Section IV. The final section presents trends and changes in domestic and foreign markets for West Coast groundfish products.

## II. Overview of the Fishery in 1987

The West Coast groundfish fishery improved considerably in 1987 (Table 1). Domestic commercial landings were 198,400 mt, 21 percent above 1986 landings and a record high for shoreside and joint venture landings combined. The nominal exvessel value of commercial groundfish landings was \$83.5 million, up 28 percent over 1986, and, after adjusting for inflation, 25 percent higher than in 1986. This is the second consecutive year that groundfish landings have expanded, and reverses the downward trend in landings that occurred from 1982 to 1985 (Figure 1). Due to the combined effects of higher landings and exvessel prices, the exvessel value of commercial groundfish landings returned to 1982 levels (Figure 1).

Commercial groundfish landings increased in both the shoreside and joint venture sectors in 1987. Shoreside landings rose 12 percent to 91,300 mt. Landings in the joint venture Pacific whiting fishery were 106,000 mt, a new record high and over 30 percent higher than in 1986 (Table 1). Joint venture landings increased for the second consecutive year and exceeded shoreside deliveries for the first time (Figure 2). Despite the continuation of restrictive trip limit and size frequency regulations, shoreside landings rose to the levels occurring from 1984-1985 (Figure 3).

The exvessel value of shoreside and joint venture landings increased 28 percent and 33 percent, respectively (Table 1). This was the highest exvessel value for shoreside groundfish landings since 1982 (Figure 3). Shoreside exvessel prices moved upward again in 1987 and, for sablefish and rockfish species, reached 10-year highs (Table 2). Due to the substantial increase in joint venture landings, the exvessel value has risen to pre-1985 levels (Figure 2), even though the exvessel price remained constant at about \$0.05 per pound.

Shoreside groundfish landings moved upward in Washington and Oregon, but were essentially unchanged in California (Table 3). Landings increased 26 percent and 23 percent in Washington and Oregon, respectively. This increase was driven primarily by improved sablefish and widow rockfish landings in both states, as well as by a significant increase in other rockfish and Dover sole landings in Oregon (Table 4). In California, a sharp drop in sablefish production was offset by a 51 percent increase in Pacific whiting landings. The resulting improvement in state landings and escalating exvessel prices led to higher exvessel values in each state in 1987.

The economic importance of the West Coast groundfish fishery is reflected in Table 5. It clearly is the most important fishery on the West Coast, based on each major fishery's contribution to the total exvessel value of all marine fish landings in 1986 and 1987. The economic dominance of groundfish fell slightly in 1987 due to the improvement in West Coast Pacific salmon and shrimp fisheries.

The fisheries for the principal species/species groups in the West Coast groundfish fishery are reviewed below and are summarized in Table 6.

### Sablefish

Sablefish remained the single most valuable groundfish species in 1987. Round weight landings were 12,745 mt in 1987, down 3 percent from 1986. The fishery was managed under an optimum yield (OY) quota of 12,000 mt for the year. The exvessel value of landings was \$13.3 million, a new record and 22 percent greater than in 1986. Coastal exvessel prices increased to an average of almost \$0.50 per pound (round weight basis), and reached a ten-year high in 1987. After adjusting for inflation, the exvessel price was at its highest level since 1979 (Table 2).

The Pacific Fishery Management Council (PFMC) allocated the sablefish quota 52 percent for trawl gear and 48 percent for nontrawl gear in an attempt to avoid the early closures of the trawl sablefish that occurred in 1985 and 1986. The 1987 season saw unexpectedly high catches and effort, possibly due to higher exvessel prices. Consequently the trawl sablefish fishery was restricted on October 2 through imposition of trip limits of 6,000 pounds or 20 percent of all legal fish on board, whichever was greater. The nontrawl and trawl fisheries for sablefish were

closed on October 14 and October 22, respectively, because they were projected to attain their allocations on those dates.

Eventual sablefish landings for the trawl fishery exceeded the allocation by 190 mt while the nontrawl allocation was exceeded by 540 mt (Table 7). Consequently, trawl gear accounted for 50 percent of total sablefish landings, compared to 46 percent in 1986 (Table 7). For fixed gear, longline vessels' share increased significantly over 1986. Pot gear sablefish landings decreased slightly, following a substantial decline in 1986. Similarly the exvessel value of sablefish landings increased for trawl and longline, but fell for the second consecutive year for pots.

### Widow Rockfish

Widow rockfish landings were 12,687 mt in 1987, 33 percent higher than in 1986 and slightly above the OY quota of 12,500 mt. The exvessel value of landings was \$9.0 million, or 55 percent higher than in 1986. This significant increase in value was due to the combined effects of higher landings and record setting exvessel prices paid for this species.

As in 1986, the PFMC adopted once a week trip limits of 30,000 pounds per vessel to slow the rate of landings and extend the fishery as long as possible through the year. This management measure was unsuccessful in preventing an early closure of the fishery in 1986, and despite a substantially higher OY, failed to produce the desired result in 1987. In October landings were projected to reach OY by November; consequently, the PFMC reduced the weekly trip limit to 5,000 pounds per vessel when 95 percent of the OY was taken. Despite the reduced trip limit, OY was reached during the first week of November and the fishery closed November 25.

### Pacific Ocean Perch (POP)

POP landings totaled 976 mt, down 28 percent from 1986. The exvessel value of landings was slightly over \$700,000. This fishery is managed with trip limits and quotas to prevent directed fishing and to rebuild depressed stocks in the INPFC Vancouver and Columbia areas.

The overall POP quota (OY) was lowered to 1,300 mt and was apportioned 500 mt to the Vancouver area and 800 mt to the Columbia area. Landings were restricted by tighter trip limits in 1987 and apparently eliminated the target fishing which resulted in excessive landings and attainment of the Vancouver OY in 1986.

### Other Rockfish

West Coast rockfish landings (excluding widow rockfish and POP) were an estimated 26,746 mt in 1987, slightly higher than in 1986. This is the first year that landings of other rockfish have increased since trip limit regulations were adopted for the

Sebastes species complex in 1983. Rockfish exvessel prices increased from an average of \$0.31 to \$0.35 per pound respectively, in 1986 and 1987. The 1987 exvessel value of landings was \$21.5 million, the highest on record and up by 14 percent compared to 1986.

Regulations for the Sebastes complex were the same as in 1986 at the beginning of the year. However, landings of yellow-tail rockfish (S. flavidus) were higher than expected. Yellowtail rockfish trip limits were adjusted downward in July when projections indicated that the allowable biological catch (ABC) would be reached in August and could be exceeded by as much as 60 percent by year's end.

### Flatfish

The combined landings of all flatfish totaled 28,869 mt in 1987, up almost 10 percent from 1986. Moreover, all species groups had higher landings and exvessel values. Dover sole landings and exvessel value rose 7 percent and 26 percent, respectively. Dover sole remained the second most valuable groundfish species landed on the West Coast in 1987, after sablefish.

The increase in flatfish production occurred in spite of substantially higher landings in the West Coast pink shrimp and joint venture pacific whiting fisheries. This contrasts to the 1986 fishing year, when Dover sole landings reportedly declined due to the diversion of trawl effort to high valued pink shrimp and high volume joint venture fishing (Korson and Silverthorne, 1987). In 1987, however, a favorable rise in exvessel prices paid for Dover, English, and petrale sole may explain this reversal. The average exvessel price for Dover sole increased by 18.2 percent in 1987, compared to 7.5 percent from 1985 to 1986. Moreover, exvessel prices paid for rex sole and arrowtooth flounder, the major species in the other flatfish category, have increased the past few years, resulting in continued higher landings of non-major flatfish species.

### Pacific whiting

The quantity and exvessel value of shoreside Pacific whiting landings rose 38 percent and 48 percent, respectively in 1987 (Table 6). This is a new record high for shoreside deliveries of Pacific whiting and reflects industry's successful campaign to market headed-and-gutted whiting products to retail supermarkets and institutions. The bulk of Pacific whiting is landed at Crescent City, California.

Similarly Pacific whiting landed in joint ventures with foreign nationals reached an all-time high as well. This was due to the increased activity of Poland and the Soviet Union, and the first-time participation of the Republic of Korea and the People's Republic of China.

### III. Commercial Harvesting Sector

#### Otter Trawl Fleet

The total quantity of groundfish landed with otter trawls (bottom, roller, and midwater) increased 26 percent to 180,800 mt in 1987. Similarly the exvessel value of total groundfish trawl landings rose 40 percent to \$63.8 million. This increase in production and value occurred for both shoreside and joint venture trawl fisheries. Shoreside trawl landings were 74,700 mt, with an exvessel value of \$52.1 million in 1987, compared to 61,200 mt and \$36.9 million in 1986 (Tables 8 and 9). The real value of shoreside trawl landings was a new record in 1987 (Figure 4). As described previously, joint venture trawl landings increased significantly, exceeding 100,000 mt for the first time (Figure 2).

The shoreside groundfish trawl fleet, defined as vessels landing any amount of groundfish with legal bottom, roller, or midwater trawl gear, consisted of 330 vessels in 1987. This is an increase of 23 vessels over the number delivering shoreside in 1986 and reverses a five-year downward trend in the size of the shoreside trawl fleet (Table 10). In general the increase is distributed uniformly across all vessel size classes (Table 11). In addition, a total of 31 trawl vessels participated in the Pacific whiting joint venture fishery. Of these, 4 joint venture trawlers did not deliver to shore in 1987. Thus, the total groundfish trawl fleet was 334 vessels, up 8 percent from 310 in 1986.

The trawl fleet expanded by 24 vessels due to the entry of 48 vessels and departure of 24 vessels. Table 12 shows the fate of those trawl vessels leaving the groundfish fishery in 1987. They either participated exclusively in joint venture fisheries (16.7 percent), shifted into the pink shrimp fishery (25 percent), switched to other gears or fished in Puget Sound (29.2 percent), were sunk (3 percent), or had unknown fates (16.7 percent). It is noteworthy that no cases were identified in 1987, where vessels were leaving because of financial difficulties.

Previous economic status reports have reported average trawl vessel revenue from groundfish landings on the West Coast as an indicator of vessel economic performance. However, it is now possible to determine the value of all West Coast and Puget Sound shoreside and joint venture landings for the trawl fleet, using the PacFIN research database (RDB). Because this value represents a larger fraction of the fleet's economic activities than just groundfish landings, it is a better indicator of economic performance, and will be used in place of the exvessel value of groundfish landings.

A list of vessels comprising the West Coast groundfish trawl fleet in 1986 and 1987, as provided by state fishery agencies,

was matched against the identification numbers of vessels in the PacFin RDB. This procedure resulted in matches for 303 and 324 trawl vessels in 1986 and 1987, respectively.<sup>3</sup> After adjusting for inflation, the average gross revenue per trawl vessel from all West Coast marine fish landings was \$258,400 in 1987, compared to \$212,400 in 1986 (Table 13).<sup>4</sup> This is a 22 percent increase in gross revenue per vessel and reflects not only improved groundfish landings, but also higher landings in alternate fisheries that are important to trawl vessels, namely, pink shrimp and Dungeness crab. The exvessel value of West Coast shrimp landings exceeded \$47 million, up over 52 percent from the approximately \$31 million in landed value for 1986. Moreover the exvessel value of West Coast crab landings (\$27 million) was about 19 percent higher than in 1986. Trawl vessels participated more heavily in the pink shrimp and Dungeness crab fisheries in 1987, as exhibited by the increase in numbers of vessels relying on these species for their principal source of income<sup>5</sup> (Table 13). Thus, in terms of gross revenue per vessel, the overall groundfish trawl fleet was significantly better off in 1987 due to the simultaneous improvement in several West Coast fisheries that trawl vessels engage in during the year.

A more detailed breakdown of average adjusted gross revenues across vessel size classes indicates that most components of the trawl fleet had improved earnings as well (Table 14). An exception is the largest vessel size class (over 80 feet), in which average gross revenues fell 8 percent to slightly over \$301,000 per vessel in 1987. However, this decline should be interpreted with care, because many of the larger trawl vessels generate significant income in Alaskan groundfish fisheries, and the RDB does not include data on Alaskan fishing activity at this time. The largest increase in average adjusted gross revenues occurred for vessels in the 51-60 foot size class. Moreover, there is a rather significant increase in revenues shown for all of the intermediate vessel size classes (i.e., 40 thru 70 feet).

Another significant source of revenue for some West Coast groundfish trawl vessels is from fish landed in Alaska. Trawl vessels participating in Alaska have benefited from the rapidly expanding groundfish fishery. In 1987, shoreside groundfish landings continued to grow, more than doubling in quantity (408,000 mt) and exvessel value (\$141.3 million) due in large part to the growth of domestic catcher-processor fishing activity in the Bering Sea. At the same time, domestic joint venture groundfish landings (1,374,000 mt) and exvessel values (\$187.4 million) were 12.5 percent and 31 percent higher, respectively.

#### Pot/Trap Vessels

West Coast pot vessel groundfish landings are comprised primarily of sablefish and declined to a seven year low in 1987. A total of just slightly over 2,000 mt was landed coastwide, down 6.3 percent from 1986 (Table 8). However, the low level of production was offset by a 23.3 percent increase in the average

adjusted exvessel price of sablefish (Table 2). Consequently, the exvessel value of groundfish pot landings was \$2.3 million, or 7.5 percent higher than in 1986.

Data from the PacFin RDB were used to evaluate the economic status of the sablefish pot fleet. For this purpose, all vessels which landed at least 1,000 pounds of sablefish with pot gear were selected as the target fleet, thereby eliminating pot vessels which landed only very small quantities of sablefish.<sup>6</sup> Using this criterion, the sablefish pot fleet consisted of 28 vessels in 1986 and 1987. The economic performance of the pot fleet, measured in terms of average gross revenues generated from all marine fish landings on the West Coast and Puget Sound, is summarized in Table 15. In 1987, the 28 vessel sablefish pot fleet had average adjusted gross revenues of \$126,300 per vessel, down slightly (4.2 percent) from the \$131,600 per vessel in 1986. Further, the proportion of pot vessels that were dependent on sablefish for their principal source of revenue dropped from 75 percent in 1986 to 68 percent in 1987. The data also show that Dungeness crab was the principal species for 18 percent of the fleet in each year and was the primary alternate West Coast fishery for sablefish pot vessels.

For various components of the pot fleet, the change in gross revenue position was much less constant than for the fleet taken as a whole (Table 16). Small (under 40 feet) and intermediate (41-70 feet) sized vessels had, on average, increased gross revenues in 1987, after adjusting for inflation. The largest percentage increase in average gross revenues occurred in the 41-50 foot length category. In contrast, average adjusted gross revenues fell 28.4 percent for the largest vessel size class (over 70 feet). This suggests that large vessels may not have benefited as much as smaller vessels from the increase in exvessel prices, if catch per boat decreased more rapidly for larger vessels.

### Longline/Setline Vessels

The West Coast longline fleet landed almost 7,000 mt of groundfish in 1987, up 18 percent from 1986.<sup>7</sup> Longline production reached a seven-year high in 1987 (Table 8). The total exvessel value of longline landings was over \$9.5 million, surpassing the previous high set in 1986 by almost 40 percent. As in past years, the principal West Coast/Puget Sound species for the groundfish longline fleet is sablefish; in 1987 over 60 percent of the landings consisted of this species.

Because sablefish is the most important species, vessels which landed sablefish with longline gear were analyzed to monitor the performance of this segment of the fleet. In order to exclude "fringe" producers, all vessels which landed at least 1,000 pounds of sablefish with longline/setline/pole-and-line gears were selected from the PacFin RDB for this purpose (see Footnote 7). This selection process resulted in a longline fleet of 129 and 132 vessels in 1986 and 1987, respectively.

The sablefish longline fleet had substantially higher average gross revenues from West Coast/Puget Sound landings in 1987 than in 1986 (Table 17). Average adjusted gross revenues increased 22 percent to \$113,100 per vessel in 1987. Not surprisingly, the principal species/species groups for this fleet are sablefish and halibut (California and Pacific). However, in 1987 a much larger percentage of the fleet (53 percent) relied principally on sablefish and fewer vessels were primarily dependent on halibut than in 1986. In light of the very high exvessel prices paid for longline caught sablefish, the growth in the percentage of the fleet that relies principally on this species is not surprising. As computed from Table 7, the average coastwide exvessel price paid for longline caught sablefish (based on round weight equivalents) was \$0.68 per pound in 1987, compared to \$0.53 per pound in 1986.

As with trawl and pot gear, the sablefish longline fleet was divided into various length size classes to examine the performance of vessels in more detail (Table 18). With the exception of the smallest length class (under 30 feet), all size classes had increased average gross revenues per vessel, after inflation is taken into account. Vessels in the largest size class (over 70 feet) had the greatest percentage increase in average gross revenues per vessel, but the relatively low absolute value for average gross revenues suggests that these vessels probably generate significant revenues from longlining in Alaska.

#### Other Gear Vessels

The quantity of groundfish landed with other gears, including set net, troll, jig, shrimp trawl and other miscellaneous gears was about 8,650 mt in 1987. This compares to a total of almost 13,000 mt in 1986. The significant decrease in the magnitude of 1987 landings is due primarily to a sharp decline in the miscellaneous gear rockfish catch landed in California.

Groundfish landings by set net gear fell 7.2 percent in 1987. However, this decline was more than offset by increases in exvessel prices; therefore there was a 2.5 percent increase in the exvessel value of set net landings. Groundfish set net production dropped for the first time since 1984 and reverses the rapid growth in landings experienced from 1981-1986 (Figure 5).

#### IV. Groundfish Processing Sector

The National Marine Fisheries Service annually surveys processing plants on the West Coast to determine the volume and value of processed fish products and employment in the fish processing sector. Because only voluntary reporting is required, responses can vary by year and state. In recent years, the response in Washington and Oregon has been very good with only a

few firms failing to report. However, at the time of this writing, survey compliance in California was about 50-70 percent. Therefore, the statistics presented in this section will include only partial data for California.

The results of the Processed Product Survey were used to compute average weighted wholesale prices received by processors of selected fresh and frozen West Coast groundfish products in 1987. Price statistics were derived from data on Oregon and Washington plants and from those plants responding to the survey in California. However, due to the low sample size in California, the estimates of average coastal prices may be somewhat biased if a geographic variation in prices occurs from north to south. Taking this into account, average wholesale prices were higher for most major species categories in 1987. Moreover, wholesale prices have risen steadily over the last ten years (Table 19).

The Processed Product Survey does not indicate product form reliably nor the distribution of the product. However, based on past studies which have been more detailed, most of the flatfish and rockfish products are sold as fresh fillets to wholesalers, brokers, supermarkets, restaurants, and retail fish markets. A smaller quantity of flatfish and rockfish fillets are frozen. Sablefish are filleted or smoked for the domestic market, or dressed for the export market.

The number of responding plants that processed groundfish in 1987 totaled 12 in Oregon, 24 in Washington, and 11 in California (Table 20). Included in the Washington plants were several Washington-based at-sea processors that operated off Alaska; however, not all firms reported in 1987. The reporting of fishery production becomes more complex as increased at-sea processing takes place. Data can be collected as to the area of the fishery, landing of the product, or location of the firm.

Employment in Oregon and Washington groundfish processing plants is provided for 1986 and 1987 (Table 21). California is omitted because several major groundfish plants failed to respond to the survey. Average annual monthly employment in Oregon was virtually unchanged from 1,108 in 1986 to 1,111 in 1987, while it increased in Washington from 1,173 in 1986 to 1,299 in 1987.

## VI. West Coast Groundfish Markets

The total quantity of West Coast domestically caught fresh and frozen groundfish supplies to West Coast markets increased in 1987. This resulted from an increase in shoreside deliveries of groundfish and a dramatic growth in the quantity of frozen-at-sea Alaskan groundfish produced by Washington-based companies. Wholesale prices of groundfish have moved upward, mostly in response to increased demand for fish by consumers switching to

more healthful diets (Johansen, 1987). This trend continued in 1987 with average wholesale prices of flatfish and rockfish fillets increasing by 17 and 23 percent, respectively from prices in 1986. One exception to the higher prices was sablefish, which declined 8 percent from 1986, according to wholesale price data computed from the Processed Product Survey.

West Coast supplies of groundfish were higher as domestic landings increased 12 percent and imports rose. The large increase in imports was due to the increase of Pacific whiting from Canada, while imports of other groundfish were lower. Imports of fresh, chilled or frozen rockfish from Canada into West Coast ports of entry were 16 percent below a year earlier but were above the 1983-85 levels (Table 22). West Coast imports of orange roughy from New Zealand were 4,030 mt in 1987, down 15 percent from 1986 (Table 22). The rate at which orange roughy imports have entered West Coast ports has slowed somewhat, although a sharp increase in orange roughy imported from Australia nearly offset the reduction in New Zealand supplies in 1987. After hitting record high levels in mid-1986, wholesale prices of orange roughy eased slightly in the second half of 1986. Prices declined further in 1987 due to buyer resistance in the United States to high prices, reported excessive drip loss, additional supplies from Australia, and an 11.5 percent decline of the U.S. dollar relative to the New Zealand dollar (Parker, 1988). The U.S. dollar fell to NZ\$1.6856/U.S. dollar in 1987 from NZ\$1.9064 in 1986.

Based on U.S. Bureau of the Census data, West Coast exports of sablefish in 1987 amounted to 18,997 mt or 41.9 million pounds, up 57 percent from 1986. The increase reflects improved supplies from higher catches off Alaska, as landings off the West Coast fell 3.3 percent below 1986 levels. The reported value of these exports nearly doubled from 1986 to \$70 million in 1987. Japanese companies continue to be the major buyers of sablefish, purchasing 18,755 mt, valued at \$69.9 million, or nearly 99 percent of the exports. The average export price of sablefish increased 23 percent to \$1.67 per pound, up from \$1.36 per pound in 1986. Much of the increase was due to a decrease in the value of the dollar in terms of the yen. Tokyo wholesale prices (in yen) for 5-7 pound and 4-5 pound fish were 13.7 percent and 10.3 percent, respectively below 1986 levels, while prices of 3-4 pound fish were virtually unchanged from the previous year (Table 24).

Exports of fishery products have greatly benefited from the weaker U.S. dollar relative to the Japanese yen in 1986 and 1987. The average annual value of the U.S. dollar relative to the yen fell 14 percent in 1987 to 144.6 yen/U.S. dollar from 168.35 yen in 1986 (Table 29). This decline followed the 29.4 percent decrease of the U.S. dollar from the previous year.

## Footnotes

1. The West Coast refers to all catches taken from International Pacific Fishery Commission statistical areas under the jurisdiction of the Pacific Fishery Management Council and which are landed in the three states. It does not include Puget Sound groundfish catches.
2. Previous reports have included data on the recreational groundfish harvesting sector. However at the time of this writing, data obtained normally from the NMFS Marine Recreational Fishery Statistics Survey were not available.
3. The vessel identification numbers for which no matches could be found in the RDB are probably due to some form of coding error which has yet to be resolved.
4. All average values are adjusted for inflation using the GNP implicit price deflator, where the base year is 1986 = 1.00.
5. Principal species is defined as that species which accounts for more of a vessel's revenue than any other species.
6. Using this minimum landings criterion, the number of pot vessels will necessarily be lower than the number appearing in Table 10, which gives the number of vessels making at least one groundfish landing with that gear.
7. Commercial pole-and-line landings of groundfish are included because almost all of the sablefish landed in California is associated with commercial pole-and-line gear, according to the PacFin Management database. This sablefish catch is probably mostly longline, which is coded as pole-and-line by the state.

## Acknowledgements

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Table 1 - Groundfish landings and exvessel values for Washington, Oregon, and California, including joint venture deliveries in waters off these states, 1986-1987.

	<u>1987</u>	<u>1986</u>	<u>% Change</u>
Shoreside (mt)	92,320	82,298	+12.2
Joint Venture (mt)	106,095	81,855	+29.6
Total WOC Landings	198,415	164,153	+20.8
Shoreside Values \$			
Current	71,875,000	56,240,000	+27.8
Real <sup>1</sup>	70,204,100	56,240,000	+24.8
Joint Venture Value			
Current	11,663,000	8,760,000	+33.1
Real	11,391,900	8,760,000	+30.0
Total WOC Groundfish Landed Value			
Current	83,538,000	65,000,000	+28.5
Real	81,596,000	65,000,000	+25.5

Source: Pacific Coast Fishery Information Network (PacFIN);  
Groundfish report series, July 1988.  
NMFS, Northwest Region

1/ Real values are current values adjusted to eliminate the effects of inflation. This adjustment has been made by dividing current values by the current year GNP implicit price deflator, with a base year of 1986. The GNP deflators are 1.00 in 1986 and 1.0238 in 1987.

Table 2 - Average annual exvessel prices paid for some commercially important groundfish species, 1977-1987.

	All											
	Sablefish		Rockfish Combined		Widow Rockfish		Dover Sole		English Sole		Petrale Sole	
	<u>Nominal</u>	<u>Real</u>	<u>Nominal</u>	<u>Real</u>	<u>Nominal</u>	<u>Real</u>	<u>Nominal</u>	<u>Real</u>	<u>Nominal</u>	<u>Real</u>	<u>Nominal</u>	<u>Real</u>
1978	.283	.448	.181	.286	-	-	.207	.327	.245	.388	.371	.587
1979	.356	.518	.199	.290	-	-	.215	.313	.286	.416	.447	.651
1980	.199	.265	.159	.212	-	-	.211	.281	.328	.437	.458	.611
1981	.215	.262	.169	.206	.135	.164	.223	.270	.297	.362	.512	.624
1982	.252	.289	.195	.224	.157	.180	.233	.267	.318	.365	.606	.696
1983	.237	.262	.223	.246	.192	.212	.224	.247	.322	.356	.682	.755
1984	.218	.232	.251	.267	.225	.240	.231	.246	.321	.343	.709	.755
1985	.334	.343	.281	.289	.250	.257	.240	.246	.333	.342	.736	.756
1986	.374	.374	.313	.313	.275	.275	.258	.258	.360	.360	.777	.777
1987	.472	.461	.350	.343	.322	.314	.305	.298	.402	.393	.816	.797

Source: PacFIN, Groundfish Report Series

NOTE: Real prices were adjusted for inflation using the GNP implicit price deflator, where 1986=1.00. All prices are weighted averages.

Table 3 - Washington, Oregon, and California shoreside commercial groundfish landings (metric tons) and exvessel values (thousands of dollars), 1977-1987.

Year	California		Oregon		Washington		Total Coast	
	mt	\$	mt	\$	mt	\$	mt	\$
1977	32,082	12,185	10,172	4,150	12,712	4,362	54,966	20,697
1978	36,805	18,457	16,469	7,871	19,285	8,213	72,559	34,541
1979	36,392	19,566	28,935	17,264	22,508	11,112	87,835	47,942
1980	36,862	16,551	28,515	11,425	22,514	9,119	87,891	37,095
1981	42,578	21,448	37,502	14,721	23,093	10,100	103,173	46,269
1982	52,608	27,795	41,023	20,445	25,368	11,405	118,999	59,645
1983	39,498	21,984	35,158	18,345	22,970	11,257	97,626	51,586
1984	40,570	22,914	28,209	15,234	21,080	10,474	89,859	48,622
1985	43,062	26,516	29,023	17,095	19,229	12,449	91,314	56,060
1986	41,246	28,522	24,931	16,813	16,081	10,905	82,298	56,240
1982-86 Average	43,397	25,546	31,669	17,586	20,946	11,298	96,019	54,431
1987	41,410	30,682	30,627	24,328	20,283	16,866	92,320	71,875

Source: State Fishery Agencies  
PacFIN, Groundfish Report Series

Table 4 - Commercial landings (mt) of individual groundfish species by state, 1986-1987.

Species	California		Oregon		Washington	
	1986	1987	1986	1987	1986	1987
Lingcod	514	929	656	719	714	1,023
Pacific Cod	-	73	31	659	303	1,545
Pacific Whiting	2,982	4,518	420	183	61	95
Sablefish	6,099	4,347	4,653	5,239	2,415	3,144
Pacific Ocean Perch	30	96	669	549	649	332
Widow Rockfish	2,468	2,274	4,329	6,300	2,765	4,113
Other Rockfish	14,414	14,309	6,771	7,856	4,742	4,581
Dover Sole	10,987	10,761	4,822	6,058	1,480	1,622
English Sole	1,074	1,322	552	595	403	560
Petrable Sole	711	824	709	855	313	526
Other Flatfish	1,701	1,771	1,285	1,572	1,982	2,403

Source: PacFIN, Groundfish Report Series

Table 5 - Contribution of West Coast groundfish landings to the total exvessel value (in thousand of dollars) of major West Coast marine fish landings, 1986-1987.<sup>1</sup>

<u>Fishery</u>	<u>1986</u>		<u>1987</u>	
	<u>Exvessel</u> <u>Value of Landings</u>	<u>%</u>	<u>Exvessel</u> <u>Value of Landings</u>	<u>%</u>
Tuna	28,611	12.5	39,193	13.0
Groundfish	65,000	28.4	83,538	27.7
Crab	22,818	10.0	27,123	9.0
Salmon	31,563	13.8	46,323	15.4
Shrimp	31,456	13.7	47,971	15.9
Wetfish <sup>2</sup>	12,303	5.4	13,180	4.4
Other <sup>3</sup>	<u>37,065</u>	16.2	<u>43,850</u>	14.6
Total	228,816		301,178	

1/ Includes all marine fish landed in Washington, Oregon, and California, excluding fish taken from Puget Sound and landed in these three states.

2/ Excludes live-bait anchovy landings in California, and a trace amount landed in Oregon.

3/ Excludes a small amount of miscellaneous landings from Washington.

Table 6 - Landings and exvessel value of individual groundfish species landed in Washington, Oregon, and California, 1986-1987.<sup>1</sup>

<u>Species</u>	<u>1986</u>		<u>1987</u>		<u>% Change</u>	
	<u>mt</u>	<u>\$</u>	<u>mt</u>	<u>\$</u>	<u>mt</u>	<u>\$</u>
Lingcod	1,884	1,317,300	2,586	2,152,800	+37.0	+63.4
Pacific Cod	334	202,200	2,270	1,644,900	+580.0	+713.5
Pacific Whiting	3,463	448,500	4,795	666,100	+38.5	+48.1
Sablefish	13,167	10,867,700	12,730	13,244,600	-3.3	+21.9
Pacific Ocean Perch	1,348	822,700	976	704,400	-27.6	-14.4
Widow Rockfish	9,562	5,803,800	12,687	9,002,300	+32.7	+55.1
Other Rockfish	25,972	18,797,600	26,746	21,477,300	+3.2	+14.3
Dover Sole	17,289	9,821,000	18,441	12,400,400	+6.7	+26.3
English Sole	2,028	1,601,800	2,477	2,195,400	+22.1	+37.1
Petrale Sole	1,733	2,966,500	2,204	3,964,700	+27.2	+33.6
Other Flatfish	4,968	3,003,100	5,747	3,763,500	+15.7	+25.3
<b>TOTAL</b>	<b>81,703</b>	<b>55,652,200</b>	<b>91,659</b>	<b>71,214,400</b>	<b>+12.2</b>	<b>+28.0</b>

Source: PacFIN, Groundfish Report Series

1/ Includes domestic landings from U.S. coastal waters off WOC, but not Puget Sound; A small amount of landings of miscellaneous groundfish species are not included in the totals.

Table 7 - West Coast landings and exvessel value of sablefish by gear, 1986-1987.<sup>1</sup>

	Total WOC 1987		Total WOC 1986	
	mt	\$	mt	\$
Ground. trawl	6,430.0 (50.0)	4,625.5 (34.9)	6,007.7 (45.6)	3,554.7 (32.7)
Pot	2,017.0 (15.8)	2,293.7 (17.3)	2,115.9 (16.1)	2,084.6 (19.2)
Longline <sup>2</sup>	4,152.0 (32.6)	6,231.6 (47.0)	3,572.0 (27.1)	4,163.5 (38.3)
Net	36.4 (0.3)	21.1 (0.2)	117.1 (0.9)	55.3 (0.6)
Other	<u>94.7 (0.7)</u>	<u>72.7 (0.6)</u>	<u>1,354.0 (10.3)</u>	<u>1,009.6 (9.3)</u>
Total	12,730.1	13,244.6	13,167.0	10,867.7

Source: PacFIN, Groundfish Report Series.

1/ Figures in parentheses are the percentages each gear group contributed to the total landed catch and exvessel value.

2/ Includes commercial pole-and-line gear.

Table 8 - West Coast groundfish shoreside landings (metric tons) by gear group, 1981-1987.

	<u>Trawl</u>	<u>Trap/ Pot</u>	<u>Setline<sup>1</sup>/ Longline</u>	<u>Gill/Set<sup>2</sup> Net</u>	<u>Other/Misc</u>
1981	90,797	3,956	3,997	1,632	2,791
1982	103,299	6,530	4,384	2,077	2,709
1983	81,668	5,423	2,191	2,243	6,101
1984	72,693	3,854	1,989	2,199	9,124
1985	75,352	3,703	4,603	3,918	3,737
1986	61,249	2,216	5,894	4,205	8,734
1987	74,719	2,076	6,952	3,903	4,740

Source: PacFIN, Groundfish Report Series.

1/ Includes commercial pole catch for California landings, because large quantities of sablefish are landed with this gear in PacFIN. Consequently values will differ from previous annual reports.

2/ Includes gill net, set net, and other net; but not dip, trammel, seine, or miscellaneous nets.

Table 9 - Exvessel value (thousands of dollars) of West Coast groundfish landings by gear group, 1981-1987.

	<u>Trawl</u>	<u>Trap/Pot</u>	<u>Set/Longline</u> <sup>1</sup>	<u>Gill/Set</u> <sup>2</sup> <u>Net</u>	<u>Other/Misc</u>
1981	37,855	2,081	3,696	1,468	2,169
1982	46,987	4,863	4,551	1,814	1,430
1983	40,578	3,598	2,091	1,742	3,578
1984	36,885	2,338	2,083	1,955	5,361
1985	41,264	3,154	5,329	3,367	2,946
1986	36,916	2,171	6,811	3,715	6,627
1987	52,162	2,347	9,527	3,806	4,032

Source: PacFIN, Groundfish Report Series, Annual data updated and current as of June 1988.

- 1/ Includes commercial pole catch for California landings, because large quantities of sablefish are landed with this gear in PacFIN. Consequently values will differ from previous annual reports.
- 2/ Includes gill net, set net, and other net; but not dip, trammel, seine, or miscellaneous.

Table 10 - Number of shoreside vessels in Washington, Oregon, and California commercial groundfish fleets, 1981-1987.

<u>Year</u>	<u>Otter Trawl</u>	<u>Pot/Trap</u> <sup>1</sup>	<u>Longline</u> <sup>1</sup>
1981	408	66	191
1982	444	82	208
1983	436	59	185
1984	397	34	96 <sup>2</sup>
1985	358	32	129 <sup>2</sup>
1986	307	31	190 <sup>2</sup>
1987	330	30	186 <sup>3</sup>

Source: State Fishery Agencies

- 1/ Vessels landing fish caught with this gear-type in two or more states are counted in each state for years 1982-83. These numbers therefore are an upper bound for the true number of vessels using this gear-type.
- 2/ Represents number of longline vessels landing in Oregon and Washington, where double counting has been eliminated; California data unavailable for those years.
- 3/ Includes only sablefish longline vessels landing in California and Oregon plus every vessel landing any groundfish with longline/setline gear in Washington.

Table 11 - Washington, Oregon, and California groundfish shoreside trawl fleet characteristics, 1984-1987

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Total Number Landing	397	358	307	330
Frequency by Length Class (Feet)				
under < 30 feet	2	2	1	1
30-39	20	15	9	10
40-49	100	96	73	77
50-59	108	93	86	89
60-69	104	98	90	96
70-79	44	39	37	40
80-89	11	6	6	10
over > 90	8	9	5	7
Vessel Characteristics:				
Average Length	57.41	57.6	58.2	58.7
Average Horsepower	312.4	309.7	310.8	318.3
Average Net Tonnage	45.5	45.8	47.6	49.4
Number Vessels Based in Each State				
California	169	157	125	128
Oregon	146	121	110	120
Washington	82	80	72	83
Vessels Landing in More than One State	61	41	35	36

Source: State Fishery Agencies

Table 12 - Disposition of trawl vessels leaving the fleet, 1986-1987.

<u>Status</u>	<u>Frequency</u>		<u>Relative Percentage (%)</u>	
	<u>1987</u>	<u>1986</u>	<u>1987</u>	<u>1986</u>
Joint Ventures	4	10	16.7	13.0
West Coast Shrimp Fishery	6	26	25.0	33.8
Other Gears (Longline, gillnet, etc.)	7	7	29.2	9.1
Bank Repossession	-	2	-	2.6
Lost at Sea (Sank, Burned) <sup>1</sup>	3	15	12.5	19.5
Idle	-	7	-	9.1
Unknown	4	10	16.7	13.0
	—	—		
TOTAL	24	77		

Source: PacFIN Research Database  
State Fishery Agencies.

1/ Includes vessels that were damaged, but which may not be permanent losses.

Table 13 - Average gross revenues<sup>1</sup> from all West Coast landings of marine fish for groundfish trawl vessels by principal species group, 1986-1987.

<u>Principal Species</u>	<u>Average Gross Revenues (\$)</u>		<u>Number of Vessels</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Salmon	50,783	47,197	5	7
Dover Sole	200,886	225,993	61	63
Petrable Sole	105,131	130,168	8	6
English Sole	72,162	92,726	19	12
Other Flatfish	73,294	96,731	21	17
Rockfish	205,837	247,807	68	86
Pacific Whiting	500,713	624,251	26	22
Pink Shrimp	246,680	309,705	74	88
Dungeness Crab	100,563	130,412	11	16
Other	<u>171,052</u>	<u>176,875</u>	<u>10</u>	<u>7</u>
All Species	212,361	258,425	303	324

1/ Values converted to 1986 dollars  
Source: PacFin research database.

Table 14 - Average gross revenues<sup>1</sup> from all West Coast landings of marine fish for groundfish trawl vessels by length size class, 1986-1987.

<u>Size Class (Feet)</u>	<u>Average Gross Revenues (\$)</u>		<u>Number of Vessels</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Under 40	54,490	61,717	17	22
41 - 50	130,725	161,234	88	87
51 - 60	189,290	238,796	71	72
61 - 70	291,195	365,536	91	98
71 - 80	333,192	347,885	31	38
Over 80	327,344	301,307	5	7

1/ Values converted to 1986 dollars  
 Source: PacFIN Research Database

Table 15 - Average gross revenues<sup>1</sup> from all West Coast landings of marine fish for pot vessels landing at least 1,000 pounds of sablefish by principal species group, 1986-1987.

<u>Principal Species</u>	<u>Average Gross Revenues (\$)</u>		<u>Number of Vessels</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Sablefish	131,970	142,268	21	19
Dungeness Crab	95,798	142,268	5	5
Other	<u>217,228</u>	<u>31,689</u>	<u>2</u>	<u>4</u>
All Species	131,600	126,312	28	28

1/ Values converted to 1986 dollars  
Source: PacFIN Research Database

Table 16 - Average gross revenues<sup>1</sup> from all West Coast landings of marine fish for pot vessels which landed at least 1,000 pounds of sablefish by vessel length class, 1986-1987.

<u>Length Class (Feet)</u>	<u>Average Gross Revenues (\$)</u>		<u>Number of Vessels</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Under 40	65,855	78,978	4	9
41 - 50	125,165	160,575	10	9
51 - 70	150,503	163,910	4	5
Over 70	156,741	112,245	10	5

1/ Reflects conversion to 1986 dollars  
Source: PacFIN Research Database

Table 17 - Average gross revenues<sup>1</sup> from all West Coast landings of marine fish for longline vessels landing at least 1,000 pounds of sablefish by principal species group, 1986-1987.

<u>Principal Species</u>	<u>Average Gross Revenues (\$)</u>		<u>Number of Vessels</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Sablefish	82,235	116,568	57	70
Halibut	136,305	117,698	38	26
Rockfish	54,822	21,785	6	7
Crab	79,685	142,273	18	13
Salmon	24,801	34,914	8	5
Other	<u>69,608</u>	<u>139,196</u>	<u>2</u>	<u>11</u>
All Species	92,774	113,088	129	132

1/ Values converted to 1986 dollars  
Source: PacFIN Research Database

Table 18 - Average gross revenues<sup>1</sup> from all West Coast landings of marine fish for longline vessels which landed at least 1,000 pounds of sablefish by vessel length class, 1986-1987.

<u>Length (Feet)</u>	<u>Average Gross Revenues (\$)</u>		<u>Number of Vessels</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Under 30	27,313	20,662	8	8
31 - 40	44,798	51,520	41	38
41 - 50	96,939	118,203	43	45
51 - 60	163,291	180,094	19	22
61 - 70	178,067	204,036	14	15
Over 70	37,189	88,220	4	4

1/ Value converted to 1986 dollars  
Source: PacFIN Research Database

Table 19 - Average wholesale prices (\$-lb.) of West Coast groundfish processed products by species groups, 1976-1987.<sup>1</sup>

Year	All Flounders	Dover	English	Petrals	Lingcod	Rockfish	Sablefish
1976	1.062	--	--	--	0.785	0.696	0.581
1977	1.255	--	--	--	0.887	0.800	0.516
1978	1.472	--	--	--	0.878	1.085	0.653
1979	1.608	--	--	--	1.198	1.044	0.797
1980	1.600	--	--	--	1.103	0.906	0.792
1981	1.598	--	--	--	1.157	0.985	0.814
1982	1.812	--	--	--	1.142	1.078	0.891
1983	1.866	--	--	--	1.232	1.276	0.823
1984	1.763	--	--	--	1.296	1.267	0.844
1985	1.776	1.743	1.783	3.183	1.454	1.388	1.158
1986	1.764	1.874	2.069	3.987	1.561	1.477	1.566
1987 <sup>2</sup>	2.068	2.006	2.281	4.017	1.643	1.824	1.421

Source: U.S. Dept. of Commerce, NOAA, National Marine Fisheries Service, Fishery Statistics Division, Washington, D.C., U.S. Production of Fish Fillets and Steaks, 1976-85; Unpublished Data from Processed Products Survey, 1986-87.

1/ Average prices computed by dividing total value by pounds of processed product.

2/ Washington, Oregon, and partial California data.

Table 20 - Number of reporting plants that processed groundfish on the West Coast, 1980-1987.

Year	California	Oregon	Washington	Total
1980	23	13	25	51
1981	21	16	38	75
1982	19	18	37	74
1983	32	16	34	82
1984	32	11	31	74
1985	30	11	32	73
1986	17	12	25	54
1987	11	12	24	47

NA - Not available.

Source: U.S. Dept. of Commerce, NOAA, National Marine Fisheries Service, Fishery Statistics Division, Washington, D.C. 20235, Unpublished Data from Processed Products Survey.

Table 21 - Monthly employment in West Coast groundfish processing plants, 1986-1987.

Year	<u>California</u>		<u>Oregon</u>		<u>Washington</u>		<u>Total</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Jan.	--	--	918	926	1,021	904	--	--
Feb.	--	--	878	903	1,105	992	--	--
Mar.	--	--	897	900	1,279	1,047	--	--
Apr.	--	--	1,108	1,109	1,042	1,237	--	--
May	--	--	1,163	1,167	1,088	1,318	--	--
June	--	--	1,220	1,199	1,150	1,355	--	--
July	--	--	1,257	1,270	1,176	1,479	--	--
Aug.	--	--	1,238	1,293	1,338	1,593	--	--
Sep.	--	--	1,249	1,238	1,283	1,558	--	--
Oct.	--	--	1,204	1,229	1,304	1,480	--	--
Nov.	--	--	1,000	1,014	1,190	1,386	--	--
Dec.	--	--	1,168	1,086	1,096	1,240	--	--
Ave.	--	--	1,108	1,111	1,173	1,299	--	--

Source: U.S. Dep. Commerce, NOAA, National Marine Fisheries Service, Fishery Statistics Division, Washington, D.C. 20235, Unpublished Data from Processed Products Survey.

Table 22 - Selected imports (metric tons) of groundfish into West Coast ports of entry by country of origin, 1983-1987.

Species	Country	1983	1984	1985	1986	1987
Orange Roughy	New Zealand	1,819	2,547	3,829	4,750	4,030
	Australia	--	--	--	80	755
Rockfish	Canada	2,278	2,566	4,252	8,749	7,340
Flatfish	Canada	408	505	457	645	598
Pacific Whiting	Canada	3,328	4,625	7,091	7,597	12,802

Source: National Marine Fisheries Service, Statistics and Market News, Southwest and Northwest Regions.  
New Zealand Trade Commission, New Zealand Consulate Office.

Table 23 - Average annual exchange rates (currency/dollar) for selected foreign countries, 1980-1987.

Year	Canada	Japan	New Zealand
1980	1.1693	226.63	1.0273
1981	1.1990	220.63	1.1513
1982	1.2344	249.06	1.3315
1983	1.2325	237.55	1.4972
1984	1.2953	237.45	1.7290
1985	1.3658	238.47	2.0100
1986	1.3896	168.35	1.9064
1987	1.3259	144.60	1.6856

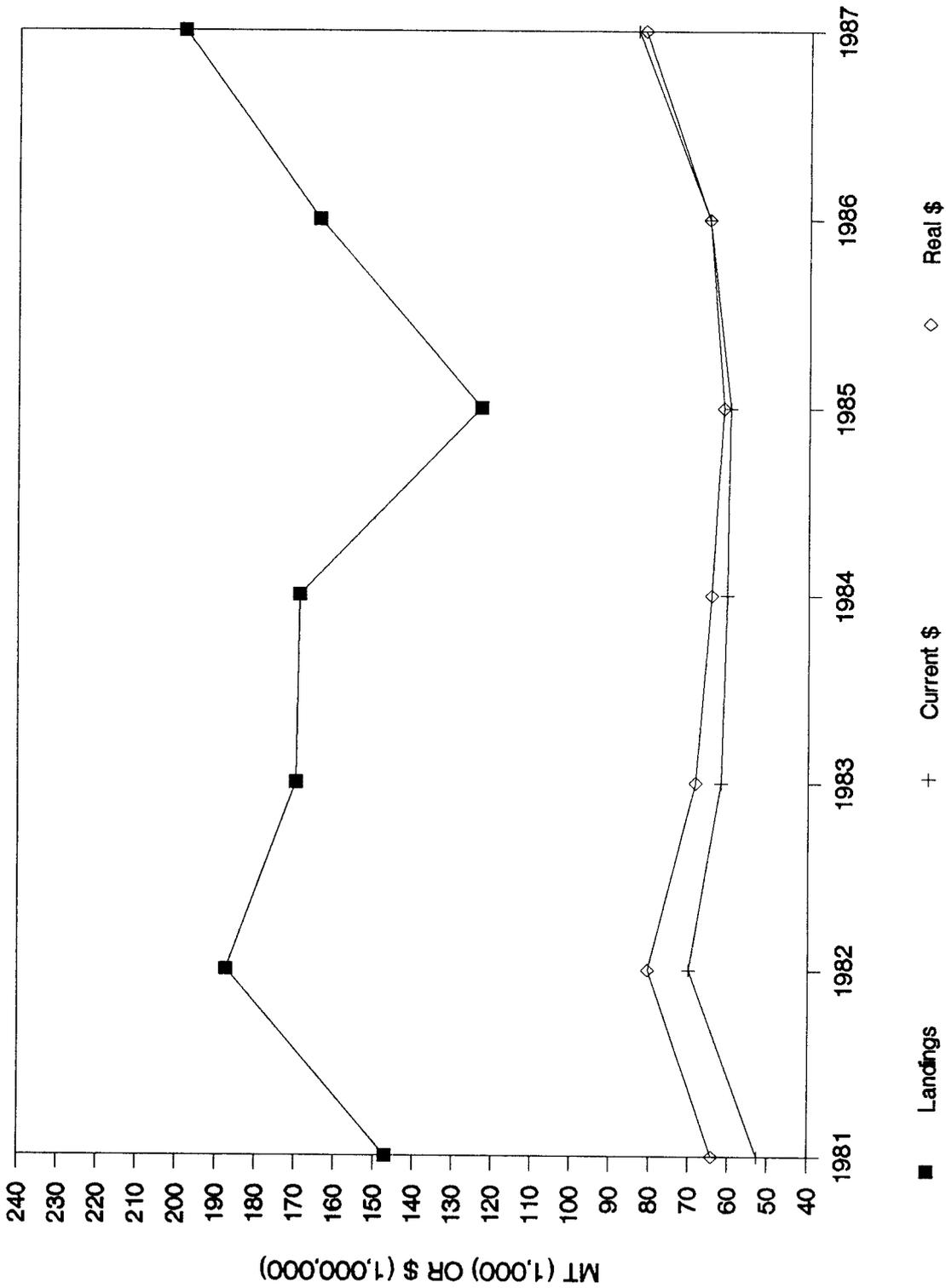
Source: Federal Reserve Bulletin, various years, Washington, D.C., p. A68.

Table 24 - Annual average Tokyo wholesale price of sablefish by size of fish, 1985-1987.

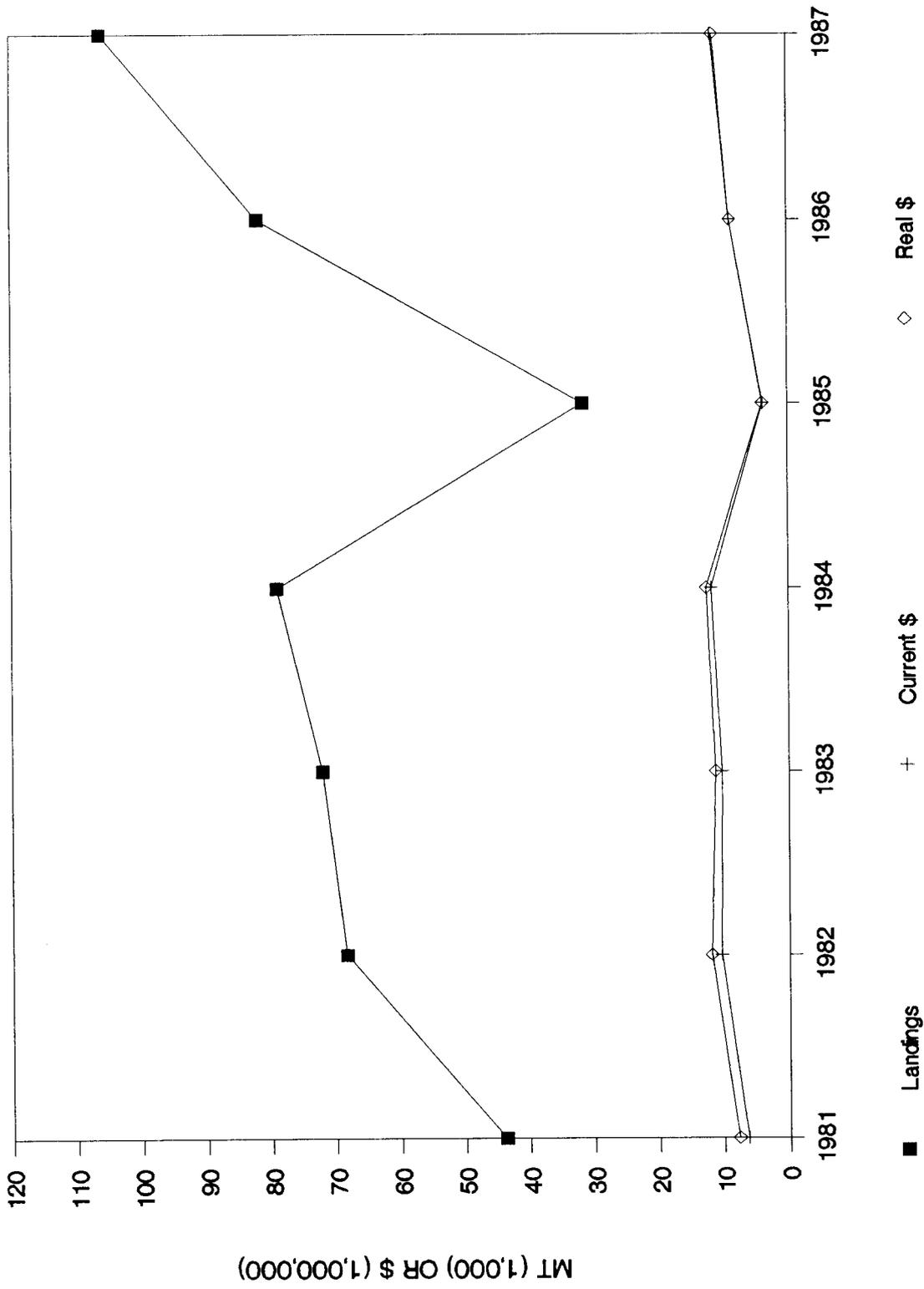
Year	5-7 lb.		4-5 lb.		3-4 lb.	
	\$/lb.	Y/kg.	\$/lb.	Y/kg.	\$/lb.	Y/kg.
1985	2.27	1195	2.12	1117	2.00	1054
1986	2.68	1005	2.39	895	2.01	754
1987	2.72	867	2.51	800	2.37	756

Note: Average exchange rate; 1985 - 238 yen/\$, 1986 - 168 yen/\$, and 1987 - 144.6 yen/\$.

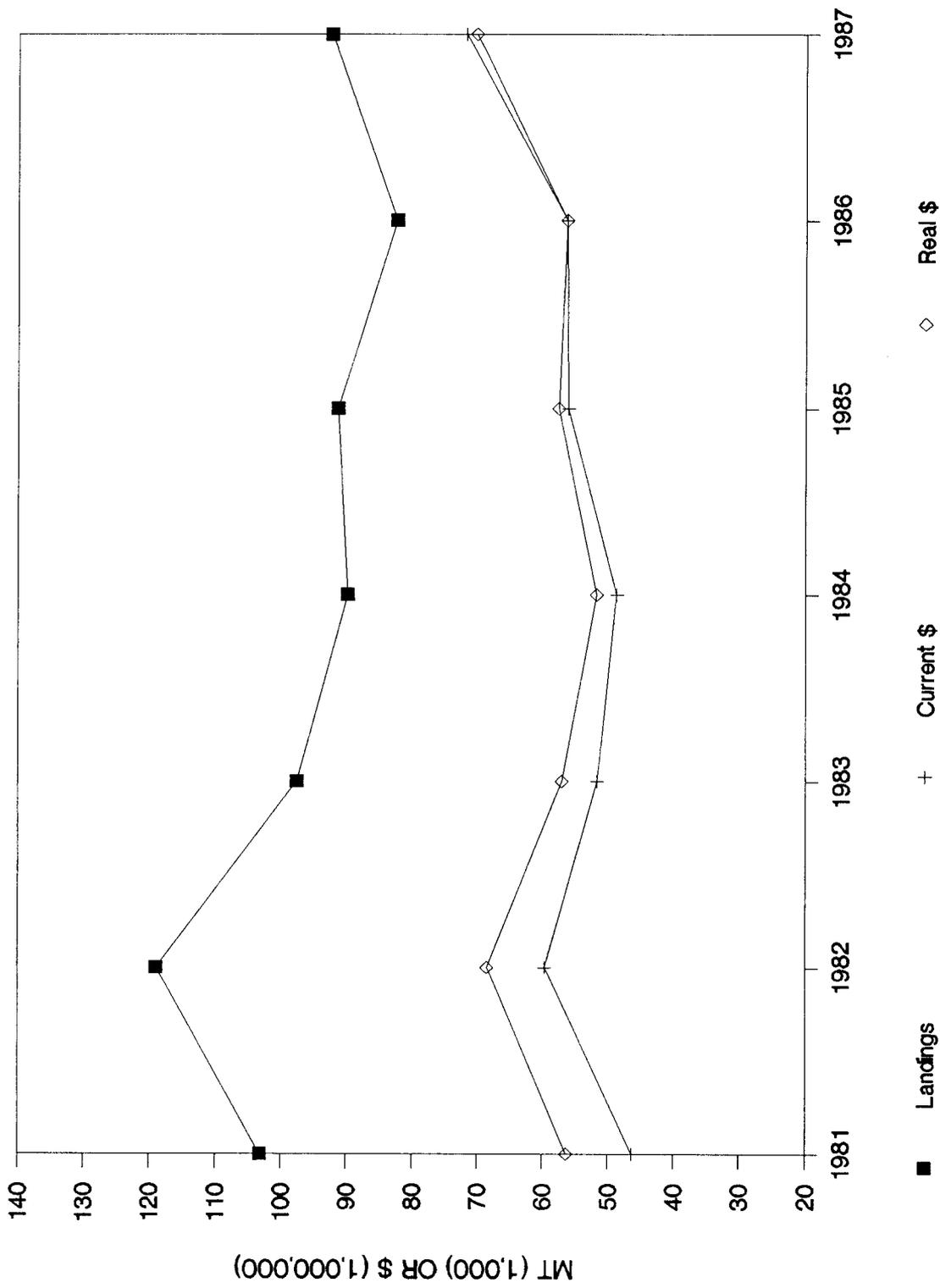
Source: Foreign Fishery Information Release, National Marine Fisheries Service, 300 South Ferry Street, Terminal Island, CA 90731.



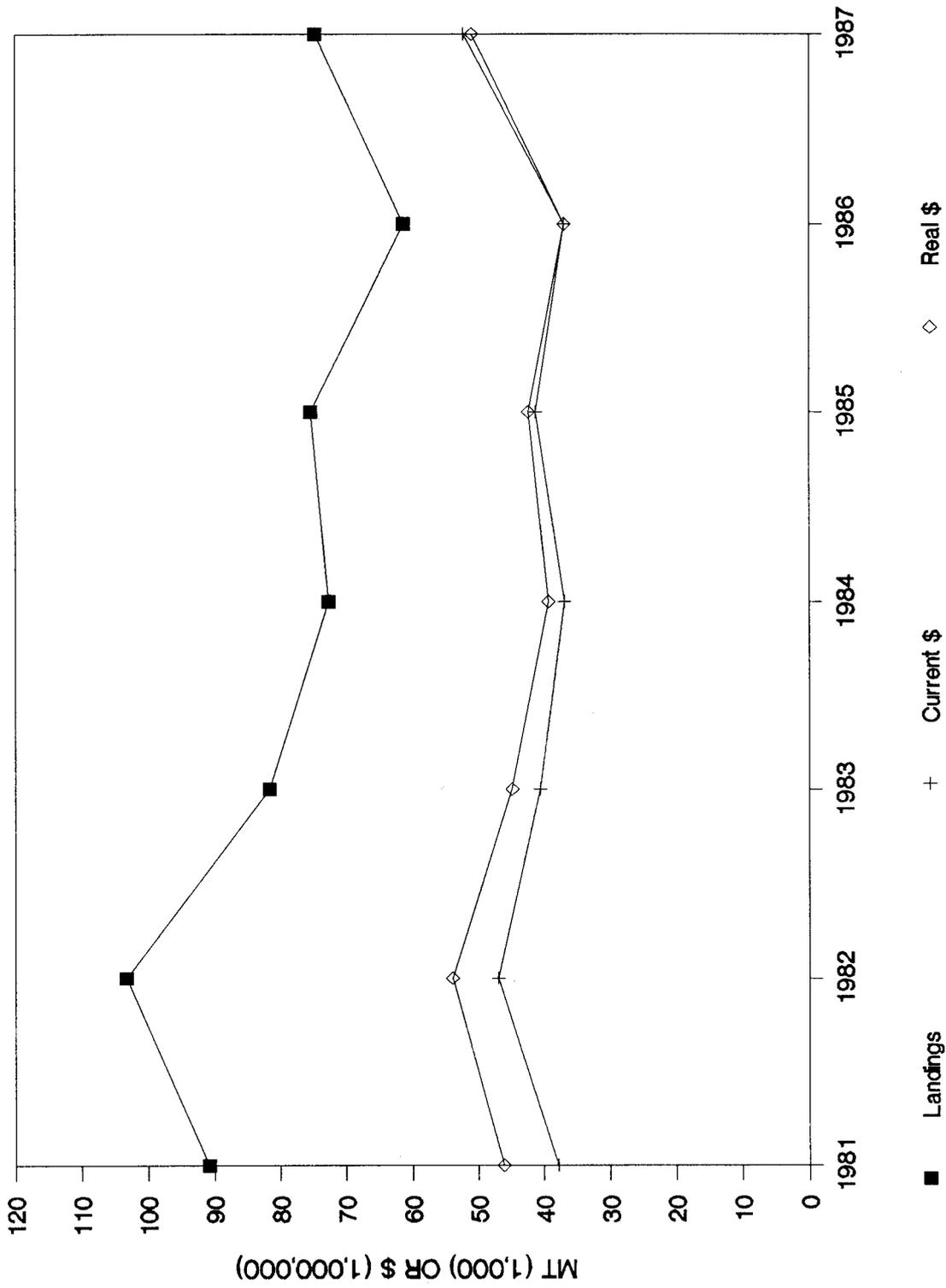
■ Landings + Current \$ ◇ Real \$  
 FIGURE 1. Washington, Oregon, and California shoreside and joint venture groundfish landings and exvessel value, 1981-1987.



■ Landings + Current \$ ◇ Real \$  
 FIGURE 2. Washington, Oregon, and California joint venture landings and exvessel value, 1981-1987.



■ Landings + Current \$ ◇ Real \$  
 FIGURE 3. Washington, Oregon, and California shoreside groundfish landings and exvessel value, 1981-1987.



■ Landings + Current \$ ◇ Real \$  
 FIGURE 4. Washington, Oregon, and California trawl groundfish landings and exvessel value, 1981-1987.

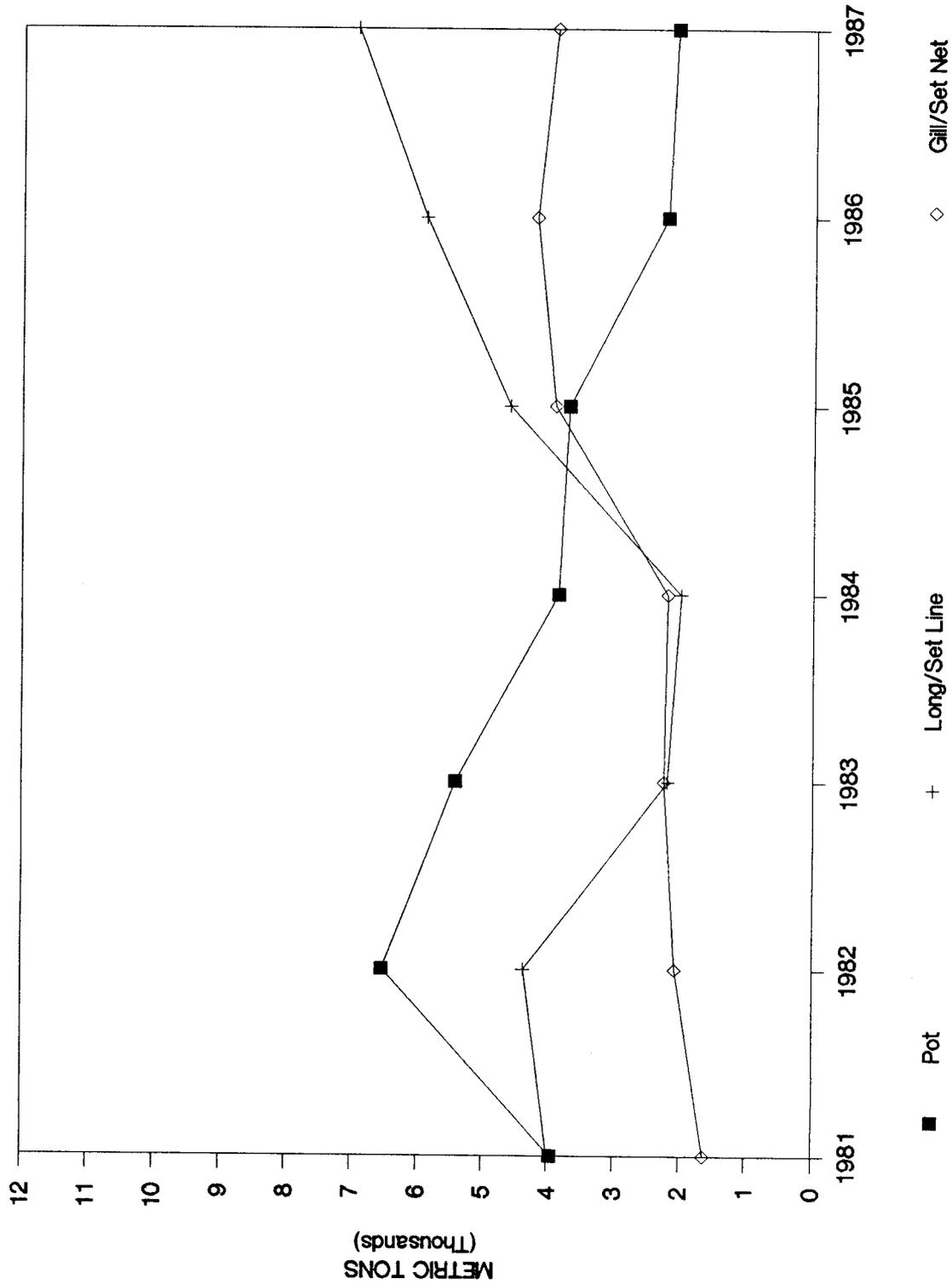


FIGURE 5. Washington, Oregon, and California fixed gear groundfish landings, 1981-1987.